WHAT IS CLAIMED IS:

1. An on-board marine electrical power generator comprising

a four-stroke, water-cooled engine with a vertically-oriented drive shaft;

an alternator with a vertically oriented rotor coupled for rotation with the engine drive shaft to produce electricity and laterally spaced from the engine shaft; and

a transportable frame upon which the engine and alternator are mounted in side-by-side relation.

2. The generator of claim 1 wherein the engine comprises an engine designed for use in a vertical shaft configuration in outboard marine motors.

3. The generator of claim 1 mounted inside a boat hull, with an exhaust system of the engine including an exhaust riser extending to above a water line of the hull.

4. The generator of claim 1 wherein the platform defines mounting points for securing the generator to below-deck structure.

5. The generator of claim 4 mounted below a deck of a boat.

6. The generator of claim 1 further comprising an enclosure surrounding the engine and alternator.

7. The generator of claim 6 wherein the enclosure is equipped with output power receptacles.

8. The generator of claim 6 wherein the enclosure admits air only for combustion, and otherwise completely encloses the engine and alternator.

9. The generator of claim 1 having an overall height of less than about 15 inches.

10. The generator of claim 1 having an overall height of less than about 12 inches.

11. The generator of claim 1 occupying a footprint with a length of less than about 25 inches and a width of less than about 15 inches.

12. The generator of claim 11 wherein the length is less than about 20 inches.

13. The generator of claim 11 wherein the width is less than about 12 inches.

14. The generator of claim 1 wherein the engine is adapted to operate on a four-stroke, gasoline cycle.

15. The generator of claim 1 wherein the engine has an exhaust elbow adapted to mix a flow of water into streaming exhaust to cool the exhaust before it is discharged.

16. The generator of claim 1 wherein the shaft of the engine is coupled to the rotor of the alternator by belted pulleys.

17. The generator of claim 1 wherein the exhaust system extends through a transom bulkhead exhaust port.

18. The generator of claim 1 wherein the alternator comprises a variable speed, permanent magnet alternator, and wherein the engine is configured to change speeds in response to load.

19. The generator of claim 1 wherein the alternator is coupled to the engine to run at a synchronous speed.

20. The generator of claim 1 wherein the drive shaft also turns a seawater pump.

21. The generator of claim 20 wherein the seawater pump is directly coupled to the drive shaft at an opposite end of the engine than a pulley driving the alternator.

22. The generator of claim 1 wherein the engine is cooled by a circulated coolant cooled in a liquid-liquid heat exchanger through which seawater is circulated before being injected into an exhaust system of the engine.

23. The generator of claim 1 wherein the alternator is air-cooled, with air in the enclosure cooled by circulation through an air-seawater intercooler.

24. A marine electrical power generator mounted inside a boat hull, the generator comprising

a four-stroke, water-cooled engine with a vertically-oriented drive shaft and an exhaust system including an exhaust riser extending to above a water line of the hull;

a permanent magnet alternator with a cup-shaped rotor mounted at one end of the engine drive shaft to produce electricity; and

a transportable frame upon which the engine and alternator are mounted, the platform defining mounting points for securing the generator inside the boat hull.

25. The generator of claim 24 mounted below a deck of the boat.

26. The generator of claim 24 further comprising an enclosure surrounding the engine and alternator.

27. The generator of claim 24 wherein the rotor carries an arrangement of permanent magnets attached to an inner circumferential surface of the rotor.

28. The generator of claim 27 wherein weight and position of the magnets are selected to balance firing impulses and radial accelerations of the engine and its rotating components.

29. The generator of claim 24 wherein the alternator includes a stationary, wound stator responsive to the moving magnetic fields generated by the rotor and packaged within the rotating rotor.

30. The generator of claim 24 further comprising a seawater pump mounted on another end of the engine drive shaft.

31. The generator of claim 24 wherein the engine comprises an engine designed for use in a vertical shaft configuration in outboard marine motors.

32. The generator of claim 24 having an overall height of less than about 15 inches.

33. The generator of claim 24 having an overall height of less than about 12 inches.

34. A method of producing electrical power on-board a boat, the method comprising

attaching a crankshaft of an outboard motor engine to an electrical generator;

mounting the engine and generator within a hull of a boat;

running the engine to produce electrical power; and

directing electrical power from the generator to a remote electrical load to perform useful work.